

WHAT IS CLAIMED IS:

1. A vehicle-onboard signal processing device mounted on a vehicle so as to receive and transmit a transmission target including a signal and electric power between the  
5 vehicle and the outside, comprising

an internal circuit where said transmission target is input and output,

an outer housing which covers said internal circuit and a conductive shielding layer is applied to the inner-  
10 periphery side of said outer housing,

an external connection portion mounted to said outer housing and facing the outside of said outer housing so as to transmit and receive said transmission target with said outside, and

15 a transmission line which electrically connects said internal circuit to said external connection portion, wherein

said transmission line extends from said external connection portion as a base point, goes between the  
20 outer-periphery surface of said outer housing and said shielding layer, extends along the spreading direction of the inner-periphery surface or the outer-periphery surface of the outer housing, penetrates the shielding layer, and then connects to said internal circuit.

25 2. A vehicle-onboard signal processing device according to Claim 1, further comprising

an internal circuit board having said internal circuit and

a board support base placed inside said outer housing so as to support said internal circuit board, wherein

5       said board support base has a cylindrical shielding portion made of conductive material which covers the outer periphery of the transmission line between the position at which said transmission line penetrates said shielding layer and said internal circuit board;

10       said internal circuit board comes in contact with said cylindrical shielding portion to close the opening at the end portion of said cylindrical shielding portion;

      said internal circuit board has a conductive layer and a noise removal means for removing noise coming through said transmission line; and

15       the noise removal means is placed immediately before or after the position at which said transmission line extending from said shielding layer penetrates said conductive layer.

3. A vehicle-onboard signal processing device mounted on a vehicle so as to receive and transmit a transmission target including a signal and electric power between the vehicle and the outside, comprising

20       an internal circuit board having an internal circuit where said transmission target is input and output,

25       a board support base which supports said internal circuit board,

      an outer housing which covers said internal circuit board and said board support base and a conductive shielding layer is applied to the inner-periphery side of

said outer housing, and

a transmission line which penetrates said shielding layer from the outer-periphery side to the inner-periphery side and is electrically connected to said internal circuit so as to transmit and receive said transmission target with said outside, wherein

said board support base has a cylindrical shielding portion made of conductive material which covers the outer periphery of the transmission line between the position at which said transmission line penetrates said shielding layer and said internal circuit board;

said internal circuit board comes in contact with said cylindrical shielding portion to close the opening at the end portion of said cylindrical shielding portion;

said internal circuit board has a conductive layer and a noise removal means for removing noise coming through said transmission line; and

the noise removal means is placed immediately before or after the position at which said transmission line extending from said shielding layer penetrates said conductive layer.

4. A vehicle-onboard signal processing device according to Claim 2 or 3, wherein

said conductive layer of said internal circuit board forms a ground layer of said internal circuit and is electrically connected to said shielding layer of said outer housing.

5. A vehicle-onboard signal processing device

according to any one of Claims 2 through 4, wherein

said conductive layer of said internal circuit board comes in contact with said shielding portion of said board support base without a clearance, or, even if there  
5 is a clearance, the length of the clearance is less than half of the wave length of the signal to be used.

6. A vehicle-onboard signal processing device according to any one of Claims 2 through 5, wherein

at least one connector to connect the transmission  
10 line is provided inside said cylindrical shielding portion,

7. A vehicle-onboard signal processing device according to any one of Claims 2 through 6, wherein

said outer housing has a penetrated portion which is  
15 penetrated from the outer-periphery side to the inner-periphery side of said outer housing, and

said penetrated portion has a breathing valve comprising

a dust preventing means which has many pores of the  
20 proper size to prevent dust from entering, and

a water preventing means which has many small pores of the proper size to prevent water molecules from entering.

8. A vehicle-onboard radar system comprising

25 a vehicle-onboard signal processing device according to any one of Claims 2 through 7;

a transmission antenna which transmits radio waves;

a receiving antenna which receives radio waves;

a high-frequency circuit which transmits transmission signals to said transmission antenna and receives received signals from said receiving antennas;

5 a high-frequency related circuit board having a high-frequency related circuit which transmits and/or receives signal or electric power with said high-frequency circuit; and

10 an antenna support base which covers said high-frequency circuit, mounts said transmission antenna and said receiving antenna on the outer-periphery surface, and is made of conductivity material so as to electromagnetically shield said high-frequency related circuit board, the high-frequency circuit, the transmission antenna and the receiving antenna  
15 respectively.

9. A vehicle-onboard radar system according to Claim 8, wherein

said high-frequency related circuit board comprises a circuit board as said internal circuit board and another  
20 circuit board;

said another circuit board has a conductive layer as a ground layer;

a circuit located between the conductive layer of said internal circuit board and the conductive layer of  
25 said another circuit board is covered with the conductive layer of the internal circuit board, the conductive layer of another circuit and said shielding layer of said outer housing;

a circuit located between the conductive layer of said another circuit board and said antenna support base is covered with the conductive layer of another circuit board, the antenna support base and said shielding layer  
5 of said outer housing; and

said conductivity material of said antenna support base, the conductive layer of said another circuit board and the conductive layer of said internal circuit board are electrically connected.